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(58) Field of search  
H2E

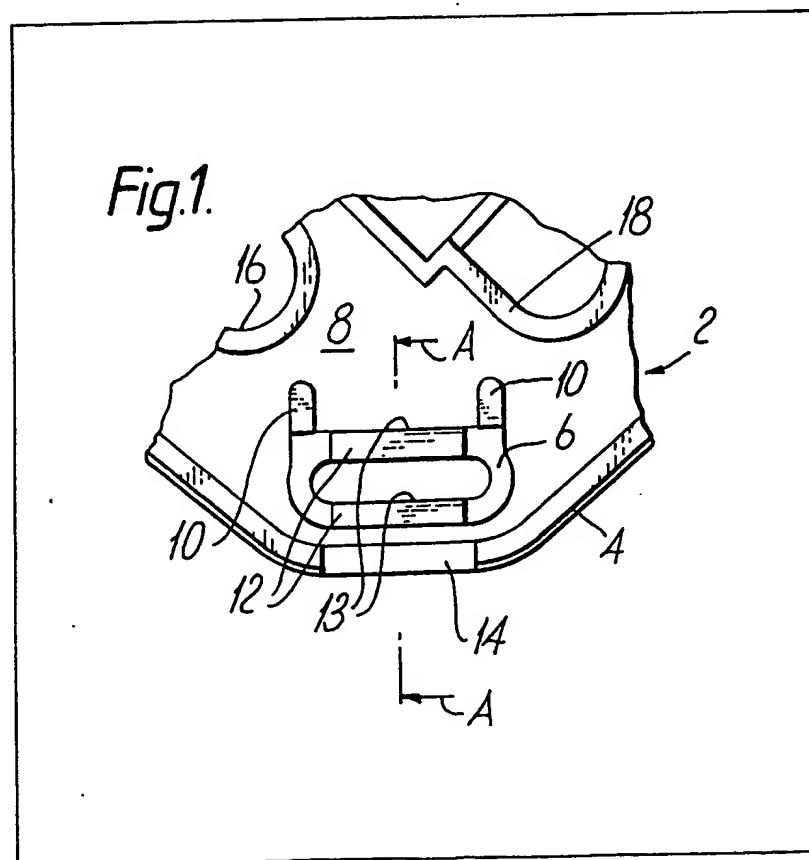
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(54) An electrical connector

(57) An electrical plug comprises a housing (2) together with a cover. The cover and housing each have internal projections (6) located to clamp a cable therebetween when the cover is closed on to the housing. The projection (6) in the housing has a bevelled surface (12) to resist removal of the cable and spaced guide posts (10).



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Fig.1.

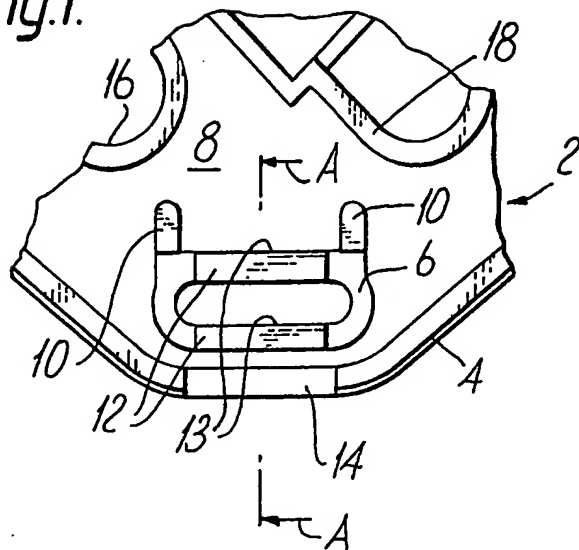


Fig.2.

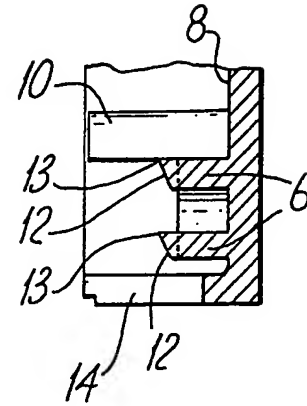


Fig.3.

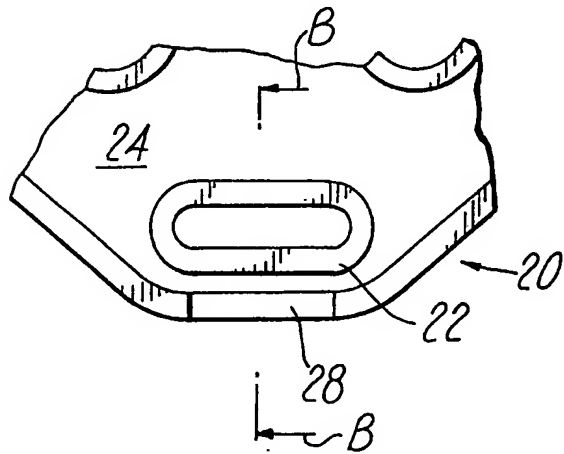


Fig.4.

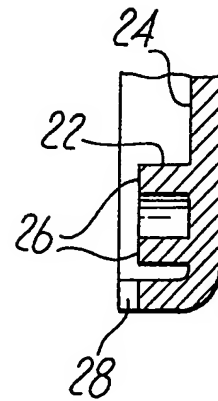


Fig.5.

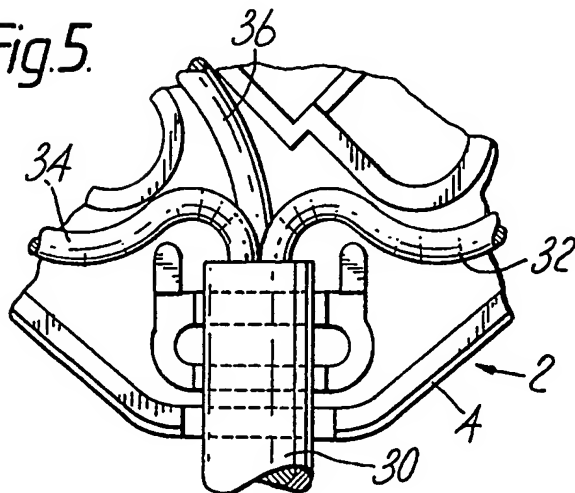
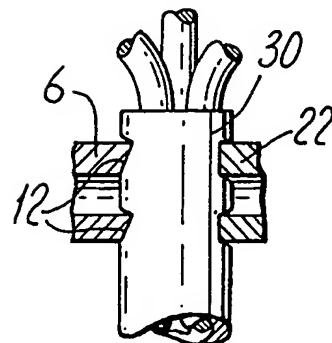


Fig.6.



## SPECIFICATION

## An electrical connector

5 The present invention relates to an electrical connector such as a three pin plug for connecting an electrical conductor carrying cable to for example a wall socket.

Electrical plugs are often provided with means for gripping a conductor carrying cable so that any force applied to the cable by for example a person heading on the cable can be taken by the cable rather than the conductors which are substantially thinner than the cable and which could become detached from the electrical connecting elements for connecting the conductors to the pins of the plug.

Means for gripping the cable is often in the form of a bridging member located within the plug. A pair of screws extend into the plug and are connected to the bridging member which grips the cable as the screws are tightened and so impedes withdrawal of the cable from the plug and consequent disconnection of the conductors from their pins.

Although this manner of gripping a cable can be satisfactory the use of screws and a bridging member could add to the cost of manufacturing the plug. Also extra time has to be spent in connecting the cable to the plug. To avoid these disadvantages there is provided according to the present invention an electrical connector comprising a housing provided with electrical connecting elements and a cover for closing the housing, which connector is provided with an opening to give access into the connector for a cable and which cover and housing each comprise internal projection means located to clamp a cable therebetween when the cover is closed onto the housing.

Such a connector has the advantages that it enables a cable to be gripped by the projection means simply by closing the housing with the cover. No screws or bridging members are required and therefore the connector and the cable can be assembled more quickly. This is particularly advantageous for manufacturers who wish to provide a plug with their appliance.

The height of the projection means are determined by the width of the cable that is to be used and this has the advantage, when the connector is used with mass produced wiring, that the projection means do not have to be individually set in each connector.

At least the projection means of the housing may comprise a bevelled surface which has an edge located to bear against the cable and which is so inclined as to impede removal of the cable from the connector when the cover is closed onto the housing. No specific type of projection means is essential; any suitable form of barb or saw tooth configuration for example could be used. This has the advantage of providing a positive grip.

The housing may comprise two spaced posts located adjacent its projection means, which posts each act as guide members for a respective conductor of the cable. This helps the cable to be correctly positioned before the housing is closed onto the

The electrical connector may be for example a two or three pin plug.

The cover may be secured to the housing means such as ultrasonic welding, a screw, interlocking snap action means, or adhesive bonding by for example impact glue.

An embodiment of the present invention will now be described by way of example and with reference to the accompanying drawing in which:

75 *Figure 1* shows a plan view of parts of the inside of the housing of an electrical plug embodying the present invention,

*Figure 2* shows a view taken along line A - A of *Figure 1*,

80 *Figure 3* shows a plan view of part of the inside of the cover,

*Figure 4* shows a view taken along line B - B of *Figure 3*,

85 *Figure 5* shows a view similar to that shown in *Figure 1* and illustrates the manner in which the cable and conductors are located in the housing, and *Figure 6* shows the projection means gripping the cable when the cover is secured to the housing.

*Figure 1* shows a plan view of parts of the inside of a housing 2 of a plastics or rubber three pin electrical plug such as a 13 Amp plug in which reference numeral 4 indicates the side wall of the housing. A projection 6 in the approximate form of a flattened tubular section is integrally moulded with the base 8 of the housing 2.

90 Adjacent the projection 6 are two posts 10 which are integrally moulded with the projection 6 and the base 8 of the housing 2. As can be seen from *Figure 2*, which is a view taken along line A - A of *Figure 1*, the projection 6 comprises two bevelled surfaces 12 which define edges 13 and which are each inclined towards the base 8 of the housing and a recess 14 defines part of an opening for a conductor carrying cable. Also, as can be seen from *Figure 2*, the posts 10 extend beyond the projection 6 in a direction away from the base 8 of the housing 2.

105 Extending from the base 8 of the housing are guide elements 16 and 18 for guiding conductors to their pins (not shown) which extend through the base 8 of the housing for connecting the plug to an appropriate electrical socket such as a wall socket. *Figure 3* shows a plan view of the inside of a cover 20 for the housing 2. The cover 20 comprises a projection 22 which is approximately in the form of a flattened tubular section and which is integrally moulded with the base 24 of the cover 20. As can be seen from *Figure 4*, which is a view taken along line B - B of *Figure 3*, the projection 22 comprises flat surfaces 26 which are parallel to the base 24 of the cover 20. The cover 20 is also provided with a recess 28 which co-operates with the recess 14 to define the opening for the cable.

120 Instead of having the bevelled projection 6 extending from the base 8 of the housing and the flat projection 22 extending from the base 24 of the cover the bevelled projection 6 could extend from the cover and the flat projection from the housing. Alternatively both projections 6 and 22 could be flat or bevelled or of any other suitable configuration.

130 *Figure 5* shows a view similar to that shown in

Figure 1 and illustrates the manner in which the cable 30 and conductors 32, 34 and 36 are located in the housing 2. The cable 30 rests on the edge 13 of each bevelled surfaces 12 of the projection 6 and the conductors are guided around the guide members 16 and 18 to their pins. Conductor 32 which is "live" and conductor 34 which is "neutral" are also guided around the posts 10 thereby enabling the cable 30 to be correctly positioned prior to securing the cover 20 to the housing 2.

When the cover 20 is secured to the housing 2 the projection 6 on the housing 2 and the projection 22 in the cover 20 squeeze and clamp the cable 30 between each other as is shown in Figure 6. The bevelled surfaces 12, by virtue of their direction of inclination, impede withdrawal of the cable 30 from the plug and thereby help to provide a secure connection between the cable 30 and the plug.

The cover 20 may be secured to the housing by means such as ultrasonic welding, a screw, interlocking snap action means or adhesive bonding using for example an impact glue.

If the cover 20 is assembled to the housing by ultrasonic welding, thereby rendering the inside of the plug inaccessible, a fuse such as a 13 Amp Fuse may be inserted in a recess (not shown) in the outer surface of the base 8 of the housing 2.

The present invention is equally applicable to a two-pin plug. The cable may be a two core cable.

#### CLAIMS (Filed on 9 Sept. 1981)

1. An electrical connector comprising a housing provided with electrical connecting elements and a cover for closing the housing, which connector is provided with an opening to give access into the connector for a cable and which cover and housing each comprise internal projection means located to clamp a cable therebetween when the cover is closed onto the housing.

2. An electrical connector according to Claim 1, wherein the projection means are integrally moulded with the cover and the housing respectively.

3. A connector according to Claim 1 or Claim 2, wherein at least the projection means of the housing comprises a bevelled surface which has an edge located to bear against the cable and which is so inclined as to impede removal of the cable from the connector when the cover is closed onto the housing.

4. A connector according to any one of the preceding claims, wherein the housing comprises two mutually spaced posts located adjacent its projection means, which posts each act as a guide member.

5. An electrical connector according to any one of the preceding claims being a three pin plug.

6. An electrical connector substantially as hereinbefore described with reference to the accompanying drawings.